



Figure 1: Open lawn in the Historic Beaver Brook Reservation, 2005 (Pressley Associates)

Executive Summary

The Massachusetts Department of Conservation and Recreation (DCR) was established in 2003 as a merger of the former Metropolitan District Commission (MDC) and the Department of Environmental Management (DEM). The DCR is responsible for the management of 450,000 acres of land, constituting 10% of the state's landmass and including 29 campgrounds, 67 beaches, 39 pools, 2 golf courses, 60 playgrounds, and 55 ball fields. The agency also manages 500 lane miles of parkways, 187 bridges, and 338 dams, and oversees watershed and forestry management across the state.

The mission of the DCR is to exercise care and oversight for the natural, cultural, and historic resources of the Commonwealth and to provide quality public outdoor recreational opportunities that are environmentally sustainable, affordable, and accessible to all citizens. To carry out its mission, DCR investigates, analyzes, plans, and provides stewardship of the Commonwealth's resources.

DCR initiated this Resource Management Plan (RMP) for the Expanded Beaver Brook Reservation in response to the transfer of 254 acres of the former Metropolitan State Hospital from the Department of Capital Asset Management (DCAM) to the DCR. The Metropolitan State Hospital was declared surplus in 1992 and in 1994, the Massachusetts Office of Capital Planning and Operations (DCPO, now DCAM) completed a Reuse Plan for the

property in collaboration with a Tri-Community Task Force, the MDC (now DCR), and others. This Reuse Plan and its subsequent amendments and disposition documents sets forth guidelines and parameters for the redevelopment of the hospital grounds, including a significant new state reservation to be managed by the DCR. The Reuse Plan also established 54 acres of land to be acquired by the City of Waltham on which DCR holds a conservation easement.

The project area for this RMP includes the original Beaver Brook Reservation (59 acres) and the portions of the former Metropolitan State Hospital land, now under the care and control of the DCR (254 acres), including a new Metropolitan Parkway, currently under construction. For the purposes of this document, the original 59-acre property is referred to as the "Historic Beaver Brook Reservation," and the former hospital land as "Beaver Brook North Reservation." The RMP Appendix also includes an evaluation of the City of Waltham's proposed 9-hole golf course with respect to environmental alterations and the potential effects on the adjacent reservation.

This RMP for the Expanded Beaver Brook Reservation is intended to provide a framework for future management and capital investment, while also defining a common vision for property managers, stakeholders, and community representatives. The Plan presents an inventory and evaluation of current site features

and conditions, and recommends both capital improvements and increased staffing.

Planning Process

The planning process for the Expanded Beaver Brook RMP began with an initial public meeting to introduce the project to the communities and stakeholders and solicit input on issues and topics to be addressed in the RMP. Approximately thirty individuals representing the communities of Belmont, Lexington, and Waltham and organizations such as the Waltham Land Trust, Massachusetts Audubon Society, and the New England Mountain Bike Associate attended in March 2006. The second public meeting to be held in May 2006 will present the findings and recommendations of the draft RMP and solicit comments from the public. The DCR will accept written comments for a 30-day period beginning when the plan is available on the DCR RMP website. Once the comment period has ended, DCR and the consultant team will evaluate all comments, and revise the draft plan in preparation for its presentation to the DCR Stewardship Council. Completion of the final draft is anticipated by June 30, 2006.

A summary of public comments and response will be included in the appendices of the final Resource Management Plan.

Distinctive Characteristics of the Expanded Reservation

The 254-acre Beaver Brook North Reservation and the 59-acre Historic Beaver Brook Reservation are very important components of the DCR's Urban Park (DUPR) System, but with different characteristics. As the first reservation in the Metropolitan Park System, the Historic Beaver Brook Reservation is a significant cultural landscape, with features that include mill ponds and dams, stone walls, open lawns, specimen trees, woodlands, trails, historic buildings and structures, and active recreation facilities. Relative to other parks, reservations, and facilities in the DUPR North Region, the Historic Beaver Brook Reservation is small in size, but it never the less holds a unique place in the history of the Metropolitan Park System, and deserves increased recognition.

The former Metropolitan State Hospital, a portion of which is now Beaver Brook North Reservation, contains a diverse assemblage of natural communities resulting in part from minimal human intrusion or alteration over many decades. Cultural artifacts remaining from the former hospital such as the MetFern Cemetery and the carriage roads enhance the property and make it readily accessible for passive recreational use. Beaver Brook North is also much smaller in size than other urban reservations such as the Middlesex Fells or Great Blue Hill, but it contains a particularly

diverse ecological system with important and extensive wetlands that have high habitat value.

Finally, the entire expanded Reservation is part of an important regional open space system, called the Western Greenway, which presents opportunities for continued habitat and trail connectivity with adjacent open spaces managed by the Commonwealth, municipalities, and private conservation organizations. Thus, the expanded Reservation, including both the Historic Beaver Brook and North Reservations is an extraordinary asset for the citizens of the Commonwealth, particularly in the dense western suburbs of Boston.

Priority Findings

This RMP builds on a substantial body of work completed by the Tri-Community Task Force, Beaver Brook Watershed Coalition, the DCR and many others as part of the surplus process for the former Met State Hospital property. Early in the reuse process, Met State was identified by the Task Forces' consultants as a "fragile and valuable natural environments including wetlands, wildlife habitats;" historic preservation advocates expressed a strong interest in the possibility of reusing existing buildings and landscapes on the site.¹ The quality of existing habitats and natural systems is confirmed in this RMP, particularly given the urban location of the property. The former hospital is also listed on the National Register of Historic Places and the North Reservation contains the MetFern Cemetery, a non-active patient cemetery for both Metropolitan State Hospital and the Fernald Center.

However, interest in the former hospital should not overshadow the importance of the Historic Beaver Brook Reservation, which was the first public reservation in the Metropolitan Park System. The Reservation contains the Beaver Brook watercourse, mill ponds and dams, the location of the original Waverley Oaks, upland woodlands and wetlands, and popular active recreation facilities including a spray pool, play area, tennis courts and turf fields.

Historic Beaver Brook Reservation

Established in 1893, the original Beaver Brook Reservation was the first reservation in the Metropolitan Park System, and is therefore eligible for listing on the National Register of Historic Places. Early accounts by Charles Eliot and Frederick Law Olmsted, Sr., proponents of the Metropolitan Park System emphasized the importance of preserving distinctive natural scenery near Boston. In recommending the preservation of land around Beaver Brook, including the famous Waverley Oaks, Eliot argued that the land in two municipalities (Waltham and Belmont) required protection under new state statutes, leading to the creation of the Metropolitan Park Commission, later the MDC (and now part of DCR).

Today, the Historic Beaver Brook Reservation includes two parcels separated by Trapelo Road. The north or Mill Street parcel contains two mill ponds with associated dams, the historic Copeland House and Stearns barn, as well as stone walls, trails, open grass areas, and woodlands. This parcel is used primarily for passive recreation including hiking, dog-walking, and bird watching; duck feeding is also popular. The Copeland House is used as DCR staff housing.

The south Waverley Oaks Road parcel contains popular active recreation facilities including children's spray pool and play area, tennis courts, and turf fields. The existing restroom and picnic pavilion are associated with the early development of the Reservation and are therefore historic structures. The restroom is not accessible. As the brook continues south through this parcel, it supports wetlands and a potential vernal pool.



Figure 2: "Beaver Brook Reservation," Metropolitan Park Commission, 1898.

Beaver Brook North Reservation

The Beaver Brook North Reservation includes a substantial portion of the former Metropolitan State Hospital grounds. At this writing, the construction of the Metropolitan Parkway north and south segments are nearing completion, which will provide public access into the Reservation, a proposed new residential development in several of the hospital buildings, and a proposed golf course to be developed by the City of Waltham. DCAM has demolished the hospital buildings in the DCR land, and has cleaned up the former dump site. Former carriage roads provide an existing trail system, and link the Reservation to the adjacent Rock Meadow conservation land. The historic MetFern Cemetery contains the remains of patients from both the Metropolitan State Hospital and the Fernald Center.

Beaver Brook North supports a diverse assemblage of natural communities including upland forest, successional shrub habitat,

upland meadow, forested wetlands, emergent marsh, and wet meadow including both certified and potential vernal pools. The importance of the wetland habitats in Beaver Brook North has been documented since the disposition process began in the early 1990s, and is confirmed by the findings of this RMP.



Figure 3: Metropolitan Parkway under construction, 2005 (Pressley Associates)

Proposed Waltham Golf Course

The RMP evaluated the natural communities and proposed 9-hole golf course on land currently owned by the City of Waltham on which DCR holds a conservation easement, which is included as an appendix to the RMP. Construction of the golf course would require substantial alteration of the vegetation and topography of the site, largely because of the limited size of the property, and its topography and wetland system. The evaluation did not consider other potential uses of the property other than conservation land, which is consistent with the DCR easement.



Figure 4: Land owned by the City of Waltham on which the proposed 9-hole golf course is located, 2005 (Pressley Associates).

Planning Issues

It should be noted that several important resource and operational issues complicate the current management of the expanded Reservation and the ultimate implementation of the Resource Management Plan. Active construction of the Metropolitan Parkway is still underway on the former Metropolitan State Hospital (MSH) property; consequently there is no formal public access at this time to the Beaver Brook North Reservation. The future construction of the residential development complex and the proposed Waltham golf course on the former MSH property, adjacent to Beaver Brook North, will also affect future site conditions in the area. The Historic Beaver Brook Reservation and Beaver Brook North are not contiguous properties (although they are linked ecologically by the Beaver Brook watercourse). Finally, no permanent, year-round DCR staffs are assigned to manage the expanded Reservation; management of the current Historic Beaver Brook Reservation is shared with other park, parkway and recreational facilities in the North Region Fells District.

Recommendations

The RMP provides a wide range of recommendations that address proposed capital improvements, public use, maintenance and management, and the protection and enhancement of the Reservation's significant natural and cultural resources, which are summarized below. The underlying theme of these recommendations is balancing resource conservation and public use, and engaging in maintenance and management practices that improve and sustain the condition of cultural, historic, and recreational resources and infrastructure without altering the character or health of the natural communities (see also Chapter 4 of the RMP and the two Recommendations plans.)

Summary of Natural Resource Recommendations

The natural resources, including plant communities, wildlife, and habitats are an important characteristic of the expanded Beaver Brook Reservation and should be managed with a light hand exclusively to protect sensitive resources, perpetuate habitat diversity, and to monitor the health and condition of the ecosystems. Natural resource recommendations include public use, management of invasive or nuisance species, habitat enhancements, and public education, in priority order:

- In sensitive habitat areas, focus recreational uses on the existing major trail systems, with passive uses (e.g. walking and bicycling) allowed and other inappropriate activities (e.g. motorized vehicle usage) prohibited.
- Provide public education materials in the form of brochures, signage, web-based information or other methods to describe the fundamentals and importance of habitats, ecosystems,

vernal pools, avian migration, food webs, and seasonal changes and to identify species found in the Reservation.

- Sustain the health of the existing natural habitat areas by managing invasive plants through physical, chemical, biological, or an integrated combination to insure effective, species-specific, invasive species elimination and control.
- Manage Canada Geese through a combination of vegetation management, halting public feeding of waterfowl, and public education.
- Enhance the distribution of natural habitats in Beaver Brook North Reservation by re-vegetating disturbed areas resulting from construction activities, building demolition, and debris removal. This will deter the colonization of these sites by invasive plant species. The former debris site may also provide an opportunity to establish a new wetland.
- Sustain habitat heterogeneity in field and successional shrub habitats, which require routine maintenance in the form of mowing and brush-cutting in the absence of natural herbivore grazing or fire.
- Enhance the emergent marsh, successional shrub habitat, and interior forest (upland and wetland) habitats by introducing wildlife nesting and roosting boxes.
- Provide educational opportunities for local school groups and college and university students. Study topics may range from simple biological principals such as habitat diversity, food webs, vernal pool studies, to reservation management, and invasive species control.

Summary of Cultural Resource Recommendations

Both the former Met State Hospital and the Historic Beaver Brook Reservation are historic properties with important resources and features including archeological sites, cultural landscapes, and historic buildings and structures. These features are integral to the importance of the Reservation and will be treated according to the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Cultural resource recommendations are summarized below:

- Preserve the historic character of the original Beaver Brook Reservation by sustaining the landscape features, materials and spaces that contribute to its significance as the first reservation in the Metropolitan Park System.

- Undertake a detailed structural assessment of the two dams to determine specific repairs needed as well as code requirements and routine and cyclic maintenance needs.
- Develop and implement a preservation plan for the MetFern Cemetery, with specific site remediation undertaken in collaboration with the Massachusetts Historical Commission.
- Retain and preserve the historic carriage roads with a rural character that reflects the low-intensity passive use recommended for the Beaver Brook North Reservation.
- Retain existing specimen oak trees in the Historic Reservation and develop a long-term program for replacement.
- Retain and maintain the historic restroom and evaluate design alternatives to make it more fully accessible while also meeting the *Secretary's Standards*.
- Retain and maintain the historic Copeland house; DCR staff residence is a compatible use and provides additional security for the Reservation.
- Conduct a building condition assessment of Stearns Barn and undertake necessary repairs.
- Repair the stone walls surrounding the Historic Reservation.
- Undertake selective clearing to reveal views from the dams and around the cascade to improve the visual quality of the Reservation.
- Restrict access to the natural area along the MBTA tracks in the south parcel of the Historic Reservation to protect the existing wetlands and to avoid unsafe access to the tracks.

Beaver Brook North

Summary of Site and Recreation Recommendations

These recommendations address recreational facilities, public use, and other site features:

Historic Reservation

- Maintain active recreation facilities in the south parcel of the Historic Reservation; retain the Mill Street parcel for passive recreation only.
- Perform regular trails maintenance to decrease loss of paths to invasive woody vegetation and reduce soil compaction and erosion.
- Maintain consistent site furnishings compatible with the historic character of the Reservation.
- Provide improved site interpretation to enhance passive recreation and public education in the Reservation; clearly display the dog policy, designated trails, and allowable uses in the northern and southern parcels.
- Consider alternatives for a new visitor facility with restrooms, drinking water, interpretive exhibits, public program space, and user information. Three locations have been identified as suitable for a small visitor building (Administration Building or two locations along the Metropolitan Parkway north).
- Once completed, perform regular maintenance of the Metropolitan Parkway, including sweeping, plowing and snow removal, maintenance of the drainage system, and maintenance of the new street trees and lighting system.
- Provide parking area of 10-15 spaces on the site cleared from demolition of the garage and power plant to improve public access from Concord Avenue.
- Delineate a multi-use trail that utilizes the existing carriage road system, connects to Rock Meadow, and is easily accessible to the parkway bikeway at both Trapelo Road and Concord Avenue.
- Undertake erosion control measures along the Mackerel Hill trail, including installing water bars or re-routing the trail if necessary. Prohibit access to the water tower site for security reasons.
- Evaluate alternatives for a wetland boardwalk that provides pedestrian access to Walnut Street and Dawes Street through the open wetlands located north of the parkway and residential development.
- Re-vegetate undesired volunteer paths with native species and promote public awareness to discourage development of volunteer paths on Mackerel Hill and in the vicinity of the vernal pools or other significant wetlands.
- Remove all existing non-functional utility poles with minimum site disturbance. This is a high priority for the Reservation given their hazardous condition.
- Develop alternatives for the treatment of the water tower, (removal and site restoration vs. expanded cell tower use with revenue).

- Prohibit motorized uses on the property as per DCR Reservation Regulations. Create public awareness and community watch programs to implement the recreation policies.
- Develop collaborative programs with established recreational associations to participate in the maintenance of trails in the Reservation.

Summary of Management Recommendations

These recommendations address additional partnerships, collaborative programs, monitoring and staffing that achieve the goals of this RMP:

- Clearly communicate and post current and future public access policies related to Beaver Brook North, including allowable uses, trail system, entrances, and rules and regulations.
- Monitor Beaver Brook North on a regular basis related to potential inappropriate uses, such as dumping, and take immediate action if such uses are observed.
- Monitor construction activities associated with the AvalonBay residential development site, particularly with respect to use of the parkway, equipment and materials storage, tree protection, and protection of the adjacent DCR reservation land.
- Work collaboratively with the City of Waltham and DCAM related to the future of the golf course site, Administration Building, the proposed parking area, the demolition of the Female Dormitory, and the redevelopment of the Gaebler School to achieve the City's and the DCR mutual goals related to conservation, historic preservation, and recreation for the Beaver Brook North Reservation.
- Actively participate in long term planning and traffic safety related to Trapelo Road and Mill Street corridors.
- Collaborate with AvalonBay Communities, Inc. to implement a boundary treatment for the new residential development that visually compliments the Reservation character.
- Recognize the state and regional significance of both the Historic Beaver Brook Reservation and the Beaver Brook North Reservation and advocate for increased operations funding to meet the maintenance and management needs of the expanded Reservation (see below).

- Provide environmental programs and stewardship activities within the expanded Reservation. Develop collaborative approach or partnerships with nearby environmental organizations (such as Mass Audubon) and institutions (such as Bentley College) related to environmental monitoring, inventory, and programs. This could provide an ongoing database of resource information and public programs that supports the mission of DCR and its partners.

Capital Improvements

Following an analysis of site conditions, management requirements, DCR resources, and with additional public input, the RMP proposes capital improvements based on urgency and priority. These recommendations are based on three priority levels, with preliminary associated costs. The highest priority refers to tasks, which if neglected any further, will result in loss of significant cultural or natural resource or risk public safety and therefore demand foremost attention; a few are also identified as Early Action Projects. Medium priority tasks include those that need attention within three to five years to avoid the risk of resource loss and to address site security issues. Tasks that are primarily repairs and enhancements, which can be delayed for five years without affecting public safety or loss of resources are categorized as low priority. The high, medium, and low priority tasks identified for Historic Beaver Brook Reservation and Beaver Brook North Reservation are as follows:

Historic Beaver Brook Reservation

High priority

- Evaluate and rehabilitate the Mill Pond and Duck Pond dams;
- Evaluate and stabilize the Stearns Barn.

Medium priority

- Repair the stone wall along Waverly Oaks Road;
- Restore trails and improve site conditions near the two ponds;
- Evaluate and implement accessibility improvements to the restroom building.

Low priority

- Develop riparian buffer planting along Beaver Brook.

Beaver Brook North

High priority

- Preserve and rehabilitate MetFern Cemetery;
- Develop a multi-use trail system on existing carriage roads;

- Remove non-functional utility poles;
- Evaluate alternatives for the water tower on Mackerel Hill.

Medium priority

- Implement vegetative restoration of sites associated with building demolition, construction, and debris removal;
- Develop site orientation and interpretation signage.

Low priority

- Design and construct a visitor center and additional parking on the cleared site of former power plant building;
- Implement native species planting along Metropolitan Parkway

Land Stewardship Zoning Guidelines

The 2003 legislation that created the Department of conservation and Recreation (DCR) specifies the preparation of management plans that include guidelines for operation and land stewardship. These guidelines address natural and cultural resources, and ensure consistency between recreation, resource protection, and sustainable forest management. Land Stewardship Zoning Guidelines provide a foundation for recommendations for resource stewardship and facility management, and are intended to cover both existing DCR property conditions as well as designed future conditions of the Reservation. Three zones can be supplemented with specific resource overlays that identify designated or recognized resource features.

Zone 1

Vernal pools possess rare species habitat with a sensitive ecological balance. Zone 1 covers a cluster of five certified and five potential vernal pools and the historic MetFern Cemetery in Beaver Brook North Reservation. There is no area designated as Zone 1 in the Historic Beaver Brook Reservation.

Zone 2

All non-developed areas with cultural and natural resources that can endure the use of the property as a reservation are classified under Zone 2. In the Historic Reservation, Zone 2 includes all of the northern parcel and the central wooded area, naturally vegetated areas near the parking area along Waverly Oaks Road and near the play area, and the wetlands along the MBTA tracks in the southern parcel. In the Beaver Brook North Reservation, Zone 2 includes all of the property excluding areas under Zones 1 and 3, which cover the aforementioned vernal pools, cemetery, the Metropolitan Parkway, and areas associated with demolition of Furcolo building, power plant, and garage.

Zone 3

All areas developed for active recreation and vehicular transportation are categorized as Zone 3. In the Historic Reservation, Zone 3 includes the parking areas, tennis courts, ball field, open areas along Lowell Path, and the play area in the southern parcel. In the Beaver Brook North Reservation, Zone 3 is limited to the Metropolitan Parkway, proposed parking area, cleared sites resulting from demolition of the garage and power plant buildings, and the disturbed area associated with demolition of the Furcolo building.

Significant Feature Overlays

The three land stewardship zones can be supplemented with significant feature overlays identified through the RMP inventory process and research. The purpose of these overlays is to provide more precise management guidance for identified resources and to recognize, maintain, protect, or preserve unique and significant resource values, regardless of the zone in which they occur. The **Cultural Resource Overlay** covers the entire Historic Beaver Brook Reservation, including the cultural landscape, archeological sites, and historic buildings and structures that should be evaluated further and listed on the National Register of Historic Places. The MetFern Cemetery in the North Reservation is also covered by the overlay.

The **Natural Resource Overlay** includes additional potential vernal pool areas in both the Historic Reservation and Beaver Brook North, which require additional field research to determine their ecological function and condition.

Management and Operations Alternatives

The expanded Beaver Brook Reservation does not have permanently assigned year-round maintenance and operations staff. The Reservation is located in the Fells District of the North Region. This is a large and complex region with thousands of acres of parkland, parkways and recreational facilities; the assignment of staff and the allocation of resources (such as operational funding, materials and equipment, and staff) are based on regional management priorities. The historic 59-acre Beaver Brook Reservation is currently managed as a collateral duty by staff assigned to the Alewife and Mystic Reservations. With the acquisition of the 254 acres of the former Met State Hospital and the construction of a new Metropolitan Parkway, funding and allocation of additional management resources is essential to the preservation and safe public use of the expanded Reservation.

With this in mind, the RMP recommends three alternative staffing levels, which provided corresponding increased resource protection and public benefit:

Level 1 is the minimal staff needed immediately to provide essential public safety and resource stewardship. This exceeds the current staffing level for Beaver Brook and consists of four positions (1 year round Supervisor, 1 year round Laborer, and 2 seasonal Lifeguards).

Level 2 staffing provides the opportunity for improved conditions and regular public programs to enhance the visitor experience. This includes six positions (1 year round Supervisor, 1 seasonal Park Ranger, 2 year round Laborers, and 2 seasonal Lifeguards).

Level 3 recommendations achieve the ideal staffing level identified by the Division of Urban Parks, North Region, including seven positions (2 year round Supervisors, 3 seasonal Park Rangers, and 2 year round Laborers).

Future partnerships could include a formal maintenance agreement with AvalonBay Communities Inc. related to the maintenance of the new Metropolitan Parkway, which provides vehicular access to the new residential development. Future agreements with AvalonBay must be consistent with DCR's conservation, preservation, recreation, and management objectives for the Reservation. Opportunities also exist for collaborative maintenance of the proposed multi-purpose trail, which could alleviate a portion of the maintenance burden and involve critical stakeholders in the active management of the expanded Reservation. Staff training with cultural resource specialists, related to the long-term preservation of the MetFern Cemetery will ensure that the DCR staff has the tools and knowledge to appropriately care for the historic cemetery.

Recommendations for Further Study

1. Complete and implement a **cemetery preservation plan**;
2. Conduct structural and code compliance evaluation of the **bridges and dams**;
3. Complete a **National Register nomination** for the Historic Reservation;
4. Conduct **water quality monitoring** in ponds and along the Beaver Brook watercourse;
5. Conduct **rare species monitoring** and evaluate the potential vernal pools;
6. Complete a structural evaluation of the **Stearns Barn**;
7. Evaluate the alternatives for the **water tower**.

Endnotes for Executive Summary

¹ Department of Capital Planning and Operations. "Metropolitan State Hospital Reuse Plan," p. 7.